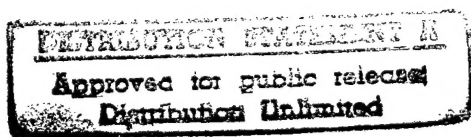


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BIOGRAPHIES OF SELECTED SOVIET SCIENTISTS

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FOREWORD

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BIOGRAPHIES OF SELECTED SOVIET SCIENTISTS

[Following are translations of the biographies of those selected Soviet scientists whose names are listed in the table of contents. Bibliographic information on the sources of these biographies is contained with each item.]

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SERGEY IVANOVICH ZAMYATIN

[Following is the translation of an article by I.G. Zheleznikov and A.S. Sokolov of the Academy of Sciences Kazakh SSR, published in Voprosy Kurortologii Fizioterapii i Lechebnoy Fizicheskoy Kul'tury, Vol. 25, No. 6, 1960, pp. 568-569.]

Sixty years have passed since the birth of the chairman of the Health Resort Resources Research Department of the Institute of Regional Pathology of the Academy of Sciences Kazakh SSR, bachelor of medical sciences, member of the Communist Party USSR since 1925, Sergey Ivanovich ZAMYATIN.

S.I. Zamyatin was born in a poor peasant family on 1 July 1900. In 1913, upon finishing the rural school, he entered the Tiflis military medical assistants' school, finishing it with distinction in 1917 after which he was appointed as a medical assistant at the Pyatigorsk military hospital. He took an active part in the civil war beginning with 1918, at first in North Causausus and as of 1920 at the Turkestan front. In 1924 S.I. Zamyatin entered medical school at the Middle Asian University in Tashkent, at the same time he worked in the railroad hospital. During these years S.I. Zamyatin was twice elected to membership in the Tashkent City Soviet, in addition to that he actively participated in the political and social life of the University.

In 1930 S.I. Zamyatin transferred for work at Alma Ata where he took an active part in the organization of the health resort affairs of Kazakhstan. The first balneological resorts in Kazakhstan were organized with his direct participation -- Alma Arasan, Kapal-Arasan and others. S.I. Zamyatin at first as chief physician of the Alma Arasan health resort and then as chairman of the Department of Health Resorts of the People's Commissariat of Public Health Kazakh SSR, devoted all of his energy to organization of resort affairs in the republic. A number of new health resorts were built during these years and the existing resorts were expanded and improved. Sergei Ivanovich combines his extensive organizational-practical work with daily work at the clinic as well as social-political and scientific activities. His first work on the study of medicinal facilities of the Alma Arasan resort was published in 1933.

During the War of National Liberation S.I. Zamyatin was

the medical service director of one of the institutions at the front. For his participation in the struggle against German-fascist aggressors he was awarded the "Order of the National War of Liberation II Degree" along with a number of other medals. After returning from the front, S.I. Zamyatin wholeheartedly devoted himself to scientific research. In 1947 he successfully presented his bachelor's thesis. In 1959 he was granted the title of senior scientific collaborator. A total of over 50 works devoted to the study of therapeutic resort factors of Kazakhstan were written by S.I. Zamyatin; over 30 of them have been published.

Sergei Ivanovich heads the Health Resort Resources Research Department of the Institute of Regional Pathology of the Academy of Sciences Kazakh SSR since 1954. During that time he and his co-workers have completed a number of large projects in the study of resort factors of Kazakhstan (Sara Agach), Kustanay, Gur'yevsk, East Kazakhstan, Alma Atin and other regions of the republic.

S.I. Zamyatin is a member of the Public Health Resort Council of the Republican Trade Union Resort Administration, member of the Administration of the Kazakh Society of Resort Workers, deputy chairman of the Scientific Health Resort Council of the Academy of Sciences Kazakh SSR. Sergei Ivanovich Zamyatin is distinguished by his exceptional modesty, diligence and knowledge of his field. Wherever Sergei Ivanovich worked he was always treated with much respect and gained a position of authority among his colleagues.

The staff of the Institute of Regional Pathology extends its heartfelt congratulations to S.I. Zamyatin on this glorious anniversary and wishes him good health and a long life.

SERGEY NIKANDROVICH POKROVSKIY

Following is the translation of an unsigned article published in Meditsinskaya Parazitologiya i Parazitarnyye Bolezni, No. 4, 1960 Moscow, page 500.

25 June 1960 will mark the 60th birthday of Sergey Nikandrovich Pokrovskiy, one of the organizers of the struggle against malaria in our country.

After completing the Military-Medical Academy in 1926, S.N. Pokrovskiy went to Central Asia where he worked as a doctor with the Turkmen military units until 1931. Even then Sergey Nikandrovich started to concentrate his attention on the struggle against malaria.

After his discharge, Sergey Nikandrovich has worked since 1932 in Stalingrad where he directed the area and then the regional antimalarial station. At that time he proved himself to be a splendid organizer of the struggle against malaria and devoted much strength and energy to the elimination of malaria in the area.

S.N. Pokrovskiy participated in the War of National Liberation beginning with 1941 as the chief of a medical epidemiological army detachment and later as chief of the antimalarial section of the medical epidemiological detachment at the front.

In November of 1944 Sergey Nikandrovich was appointed director of the Republican Scientific Research Institute on Malaria and Medical Parasitology of the Ministry of Health RSFSR at Rostov-on-Don which he heads to the present time.

The scientific activities of S.N. Pokrovskiy started in 1936 when he published his first work on malaria in "Works of the Stalingrad Institute of Epidemiology and Microbiology". Since that time Sergey Nikandrovich wrote over 100 scientific works.

These works were devoted to various problems of the epidemiology of malaria and to the organization of preventative measures and to the rationalization of these procedures, which brought about considerable savings of the national funds. Sergey Nikandrovich's work touches on problems of helminthic epidemiology and on the organization of anthelmintic measures. A portion of his works is devoted to the clarification of certain problems connected with the epidemiology of transmissible

diseases.

In 1946 Sergey Nikandrovich presented his thesis for an academic degree of a bachelor of medical science and in 1954 -- for the degree of a doctor of medical sciences. In 1956 he was granted the title of Professor.

Sergey Nikandrovich proved himself an experienced teacher in conducting a specialized course in the specialization cycles and the advanced training of doctors; he is an active propagandist for antimalarial and anthelmintic measures.

Sergey Nikandrovich, along with a group of other scientists and organizers of public health, was awarded the Stalin Prize in 1952 for his participation in the development and implementation into public health a system of measures that assured a sharp decrease in the incidence of malaria in the USSR.

S.N. Pokrovskiy engaged in extensive public work. From 1948 until the present time he has been a deputy of the local Soviet.

Sergey Nikandrovich is a member of the Scientific Council of the Ministry of Health RSFSR; he is also the chairman of the Rostov Scientific Society of Epidemiologists, Microbiologists, and infectious disease specialists, and the chairman of the Rostov Society of Helminthologists. He is a member of the Consultative Committee of Experts on Malaria of the World Health Organization since 1958.

S.N. Pokrovskiy's activities were marked with high government awards such as the "Order of the Red Banner of Labor," two "Orders of the Red Star" and medals.

Sergey Nikandrovich celebrates his 60th birthday in excellent health and in full bloom of his strength and energy. We wish Sergey Nikandrovich many more years of life and work for the good of our Homeland!

VALERIY NIKOLAYEVICH MURAT

Following is the translation of an article by Kh. N. Amirov of the Kazan' Medical Institute, published in Kazanskiy Meditsinskiy Zhurnal, No. 6, Nov/Dec 1960, pp. 72-73.

30 September 1960 marked the 60th birthday and the 30th year since the beginning of the pedagogical and public activities of the chairman of the Department of Anatomy of the Kazan' Medical Institute, an honoured man of science of the Tatar Autonomous SSR, doctor of medical sciences, Valeriy Nikolayevich Murat.

V.N. Murat's scientific activities are primarily directed at a study of the sympathetic nervous system. He established (1933) the regularity in the distribution of various elements in man in the composition of neural ganglia of the intestinal wall neural plexus, in addition to that the evidence of a gradual increase in the size of cells of the first type according to the degree of their proximity to the caudal segments of the intestinal tubule was discovered, in addition to the presence of Dogiel's first type cells which differ in size and are three to four times larger than usual, in the distal portion of the rectum.

V.N. Murat conducts his scientific research in close association with clinical medicine. He is evolving a method of treatment for hydrocephalus in collaboration with the clinicians.

In the work entitled "Morphology of the Sympathetic Nervous System According to Work Accomplished by the Department of Normal Anatomy of the Kazan' Medical Institute" (1953) V.N. Murat combined all of the morphological material that accumulated as a result of the many years of research by the staff in the field of the structure of the sympathetic nervous system. During the last several years, the department headed by him has concentrated its attention on the study of the effect of penetrating irradiation on elements of the peripheral nervous system of the internal organs. Greatest damage was discovered to occur in the pre-ganglionic sympathetic nerve fibers and a comparatively greater stability was found in the post ganglionic and sensory conductors. The study of the micromorphology of the nervous system on live subjects is now developing and has much perspective.

Valeriy Nikolayevich enjoys a well deserved position of

authority not only among his co-workers but among the entire staff of the Institute, as well as among the students, which is substantiated by his many years of work as Dean of the Department of Medicine.

Many doctoral and bachelor dissertations have been completed and presented under his guidance. V.N. Murat devotes much energy to the training of Tatar specialists; he supervises the thorough theoretical preparation of his co-workers in a persistent and demanding manner.

Three collected works, containing over 70 research projects, were published during his term as chairman of the department.

The activity of the Department of Anatomy, supervised by Valeriy Nikolayevich is well known beyond the borders of the Tatar Autonomous SSR. He as well as his colleagues appear at conferences and congresses of anatomists. In 1960 Valeriy Nikolayevich made a report at the International Congress of Anatomists in New York.

A student scientific circle has been in existence for 15 years, many members of which are now scientific workers in the Department.

Valeriy Nikolayevich combines his fruitful scientific work with extensive pedagogical work. He has conducted much academic-methodological work on the reorganization of teaching methods at the Department. The academic museum has been re-equipped and considerable expanded. Much has been done in the matter of equipping the Department with latest demonstration and research apparatus, a number of subsidiary departmental buildings have been reequipped.

Valeriy Nikolayevich is a good teacher and lecturer. His lectures, in which he illuminates the morphological facts from a point of view of their physiological and clinical significance, are always received with interest by the student audience.

Valeriy Nikolayevich is extensively engaged in public work as the chairman of the Tatar Republican Department of the All-Union Society of Anatomists, Histologists and Embryologists, member of the board of the All-Union Society of Anatomists, Histologists and Embryologists, an active member of the Leningrad Society of Naturalists.

The fruitful scientific, academic-educational and public activity of Valeriy Nikolayevich is highly valued by the government which has awarded him the title of an Honored Man of Science of the Tatar Autonomous SSR, awarding him the "Badge of Honor" and other medals.

Valeriy Nikolayevich celebrates his 60th birthday in the prime of his creative powers and his great energy. The students and friends of Valeriy Nikolayevich respectfully extend their congratulations to him and wish him good health and further success in his creative work.

YURIY ALEKSANDROVICH RATNER

Following is the translation of an article by N.I. Lyubina of the State Institute for Post Graduate Medical Education, imeni V.I. Lenina, published in Kazanskiy Medetsinskiy Zhurnal, No. 6, Nov/Dec 1960, pp. 73-74.

April of 1960 marked the 65th year since the birth and the 40th year since the beginning of the scientific-pedagogical and public activity of the chairman of the Department of Surgery and Oncology of the Kazan' GIDUV (Gosudarstvennyy Institut Di'ya Uovershenstvovaniya Vrachey -- State Institute for Post Graduate Medical Education, imeni V.I. Lenina), an honored man of science of the RSFSR, doctor of medical sciences, Professor Yuriy Aleksandrovich Ratner.

Yu. A. Ratner completed the medical school at Kazan' University in 1920, he worked in the Red Army hospitals in the Urals and in Siberia. After his discharge he worked as district surgeon.

In December of 1922 Yu. A. Ratner was picked as an intern at the Surgical Clinic of the Kazan' GIDUV imeni Lenina to work with Professor B.L. Bogolyubov. During his internship he completed some work on pulmonary diseases and uropathy. In 1925 he was appointed assistant in the clinic directed by Professor B.L. Bogolyubov and in 1930 he was elevated to the position of an assistant professor.

In 1935 Yu. A. Ratner was awarded the academic degree of a doctor of medical sciences and the title of a Professor. The same year he was elected to the position of chairman of the surgical clinic of the Kazan' GIDUV imeni V.I. Lenina, a post he has held until the present time.

Yu. A. Ratner has authored over 100 scientific works. His scientific interests are centered around problems of emergent operations, thoracic surgery, urology and oncology. For a period of 12 years he at first headed and then was a consultant of the surgical department of the Fourth Kazan' Workers' Hospital. His extensive personal experience in surgical emergencies is summarized by him in a monograph entitled: "Emergent Abdomen Surgery", published in 1947; he also wrote a chapter on this subject in a handbook that was published earlier and edited by Professor V.L. Bogolyubov.

Yu. A. Ratner showed an interest in problems of thoracic surgery throughout his long career in surgery. Beginning with 1926, he was a consultant surgeon at the antituberculous dispensary of the Tatar Autonomous SSR and is the founder of methods for surgical treatment of pulmonary tuberculosis at Kazan'.

In addition to the surgical treatment of pulmonary tuberculosis, Yu. A. Ratner engaged in other fields of chest surgery. He wrote a monograph entitled "Purulent Pleurisy and its Treatment". In 1944 Yu. A. Ratner published a monograph under the title of "Bullet Wounds of the Chest".

During the National War of Liberation, Yu. A. Ratner was the chief surgeon of the evacuation hospitals of the VTsSPS (Vsesoyuznyy Tsentral'nyy Sovet Professional'nykh Soyuzov -- The All-Union Central Council of Trade Unions) in the Tatar and the Udmurt Autonomous SSR. The extensive experience gained in surgical repair of bullet wounds served as a subject for a number of scientific works. Two collections of scientific works on that subject were published in 1947 with his participation and edited by him. M.M. Shalagin's doctoral dissertation on bullet wounds of the chest was completed under his supervision.

During the postwar years Yu. A. Ratner continued to develop problems concerning the surgery of the lungs, esophagus and diseases of the mediastinum. Complex thoracic surgery is performed at the clinic headed by him.

A number of Yu. A. Ratner's works are devoted to problems associated with the diagnosis and treatment of urological diseases. The section in the clinic devoted to urology served as a basis for the establishment of a Department of Urology, headed by Professor Yu. A. Ratner's student -- an intern, N. Kh. Sitdykov. A bachelor's dissertation on renal tuberculosis came from the clinic (intern N.I. Lyubina).

Of great significance in the activity of Professor Yu. A. Ratner was the help extended to oncological patients. Oncological and radiological sections have been created in the Department in 1945. Yu. A. Ratner became the chief oncologist of the Tatar Autonomous SSR during the same year; he conducts consultative guidance of the struggle against cancer in the republic.

Much research was conducted at the clinic headed by Professor Yu. A. Ratner during the recent years, all of which is unified by problems of chest surgery and oncology. Problems of contemporary anesthesiology are under successful investigation, as well as the surgical treatment of thoracopathy.

The multilateral nature of his activities and great personal experience in various fields of surgery all define Yu. A. Ratner as an outstanding surgeon and clinician. His erudition and profound knowledge of operative pathology make him an outstanding diagnostician. His rounds of the clinics and examina-

tions of the patients are a school of surgery, they combine deep medical thought with the utilization of latest methods of objective research, which are constantly being mastered, developed and implemented into practice.

As an instructor he is distinguished by his attentive and interested attitude towards his students; he constantly prompts his students to do research, encourages initiative in the solution of scientific problems and creative growth. Young physicians after a short stay at the clinic directed by him become qualified specialists. These qualities of Yu. A. Ratner as a scientist, teacher, mentor and a man have won for him the love of the entire staff. Two doctoral and two bachelor's dissertations have been presented under the guidance of Yu. A. Ratner; five of his students are heads of departments. He has trained a considerable number of practicing surgeons.

The staff of the Department of Surgery and Oncology and the co-workers of the Kazan' GIDUV imeni Lenina extend their heartfelt wishes to Yuriy Aleksandrovich Ratner for good health, a long life and many years of further fruitful activity for the good of Soviet public health.

MIKHAIL KHOSROVICH SHAKHNAZAROV

Following is the translation of an unsigned article published in Gazovaya Promyshlennost', Vol. 5, No. 11, Nov. 1960, page 49.

On 1 November 1960 Professor of the Azerbaijan Petroleum Institute imeni Azizbekova, Mikhail Khosrovich Shakhnazarov will become 80 years old. M. Kh. Shakhnazarov began his work in the petroleum industry as head of the petroleum section at Zabrat after completing the Petersburg Technological Institute in 1913. After the establishment of Soviet power in Azerbaijan and the nationalization of the petroleum industry, he directed the nationalized petroleum industry at Baku in the Sabunchinsk region, after which he worked with the Azerbaijan Petroleum Administration.

Work on projects for the extraction and utilization of natural gas was started in 1924 for the first time in the USSR on the initiative and under the guidance of M. Kh. Shakhnazarov. An independent Azerbaijan Petroleum Administration for the extraction and utilization of gas was established the same year.

In 1928 M. Kh. Shakhnazarov published a fundamental work entitled "Natural Gas, its Extraction and Utilization". This book was for a long time the only available guide in the gas industry and performed an important role in the development of the domestic gas industry on a basis of natural gasses.

Tirelessly developing the extraction and utilization of natural gasses, Professor M. Kh. Shakhnazarov directed the drafting of plans for the gasification of the city of Baku with natural gas. This experience in the gasification of a city was described by him in a book entitled "The Gasification of Cities" (1934) which appeared in several editions.

The academic career of Professor M. Kh. Shakhnazarov started in 1930 at the Azerbaijan Industrial Institute imeni M. Azizbekova (presently the Petroleum and Chemical Institute imeni M. Azizbekova), where a Gas Industry Department was organized on his initiative in 1938. This department is presently headed by M. Kh. Shakhnazarov.

A book entitled "The Theory and Practice in the Exploitation of Condensed Deposits" was published by M. Kh. Shakhnazarov in 1946. This book pointed out the feasibility of conducting surveys for hitherto unknown gas deposits in the Soviet Union

and particularly for the possible existence of gas deposits at Karadaga. As commonly known, this deposit is now developed and is under exploitation.

During recent years M. Kh. Shakhnazarov, in collaboration with other authors, published a fundamental work entitled "The Extraction and Transportation of Gas", which received widespread distribution in the USSR and was translated into languages of the People's Republics.

The inspired work of Professor M. Kh. Shakhnazarov is highly valued by the Party and the Government; he was decorated with the "Badge of Honor" (1940), the medal "For Heroic Work During the National War of Liberation" (1945), and the "Order of Lenin" (1957).

Our hero of the day is at the present time full of strength and energy. The editorial board wishes him many more long years of work for the good of our wonderful Homeland which he loves so much and for the development of which he devoted and devotes so much strength and energy.

VLADIMIR OSKAROVICH VITT

Following is the translation of an article
by A.S. Krasnikov of the Moscow Agricultural
Academy imeni Timiryazeva, published in
Zhivotnovodstvo, No. 7, 1960, page 93.

A meeting in honor of a corresponding-member of the All-Union Academy imeni V.I. Lenina, chairman of the Department of Horse Breeding at the Moscow Agricultural Academy imeni Timiryazeva, Professor, doctor of agricultural sciences, Vladimir Oskarovich Vitt was held by the Academic Council of the Moscow Agricultural Academy imeni Timiryazeva on the occasion of his 70th birthday and the 50th anniversary of his scientific, pedagogical and public service.

The Professor was warmly greeted by Professor S.A. Vorob'yev, the pro-rector of the academic portion of the academy, P.P. Paryshev, chairman of the Main Administration of Horse Breeding and Horse Breeding Farms of the Ministry of Agriculture RSFSR, Professor N.M. Shpayyer, chairman of the Department of Horse Breeding of the Moscow Veterinary Academy, Professor G.G. Khitenkov, deputy director of the All-Union Scientific Research Institute of Horse Breeding, as well as by the following chairmen of Departments of Animal Breeding: Professor I.I. Lakoza of the Moscow Institute of Mechanization and Electrification of Agriculture; Professor N.A. Buynovskiy of the Ryazan Agricultural Institute; Professor A.A. Zhilinskiy of the Chuvashskiy Agricultural Institute; in addition to the following: Professor A.G. Lorkh; B.D. Zavil'gel'skiy, director of the First Moscow Ivanov, director of the "Burevestnik" equestrian sports school; also present were departmental deans, chairmen of zootechnical departments, colleagues from the Department of Horse Breeding, Museum of Horse Breeding and the Academic Experimental Stable.

The chairman of the anniversary committee, Ye. Ya. Borisenko, read a welcoming address of the Minister of Agriculture of the USSR, V.V. Matskevich, and that of Marshal of the Soviet Union, C.M. Budenny, and gave a brief survey of the congratulatory telegrams (over 150 of them) that were received from all parts of our country as well as from Warsaw, Berlin and Hamburg.

Vladimir Oskarovich Vitt started his practical work in the field of horse breeding in 1916 as a specialist at the Main

State Horse Breeding Administration. Between 1918-1925 he worked as a provincial specialist on horse breeding and stud farming at the Moscow Land Department (MOZO) (Moskovskiy Zemel'nyy Oblastnyy Otdel -- Moscow Oblast Land Department) and for a period of one year filled the position of the Chief of the Administration of Horse Breeding of the People's Land Commissariat RSFSR. During that period stud farms were established in the Moscow region and Soviet race horse breeding attained its first successes.

In 1925 on the initiative of Professors P.P. Kuleshov and I.S. Popov, Vladimir Oskarovich was invited to participate in pedagogical work at the Moscow Zootechnical Institute, where he began conducting an independent course on horse breeding. Since that time this scientist has been associated with that higher educational institution and has now been teaching horse breeding disciplines for 35 years without interruption. V.O. Vitt's association with the Timiryazev Academy began in 1936 and was marked by the establishment of the Department of Horse Breeding, a Museum of Horse Breeding and an Academic Experimental Stable.

The Professor's lectures on horse breeding, always distinguished in their theoretical wealth, are very popular. This scientist and teacher has trained thousands of zootechnicians, tens of those who received bachelor's degrees and doctor of sciences degrees during the course of his position as a Professor.

Much effort was expended by this scientist on the organization of scientific-research work on horse breeding in the USSR. During 1926-1929 he worked as a senior scientific assistant directly in production at the First Moscow Experimental Plant, and during 1929-1937 he worked at the All-Union Scientific Research Institute in charge of breeding. V.O. Vitt's monumental works on the history of horse breeding in Russia, on the practice and theory of the breeding of thoroughbreds, on selection and choice, on the changes occurring with age, which is substantiated by physiological and biochemical research -- all this without a doubt represents a substantial contribution to science and practice.

The numerous scientific works and reports on broad biological subjects as well as specialized lectures on horse breeding, which always contain something new and original, have caused Vladimir Oskarovich's name to become widely known and authoritative not only in our own country but abroad as well.

Vladimir Oskarovich feels young and is full of creative ideas. His colleagues, public organizations and zootechnical departments extend their heartiest congratulations to him on the occasion of his anniversary and wish him further creative success, vitality, health and many years of happiness.

VLADIMIR NIKOLAYEVICH SUKACHOV

Following is the translation of an article
by S.A. Il'yinskaya and V.N. Smagin, published
in Izvestiya Sibirskogo Otdeleniya Akademii
Nauk SSSR, No. 6, 1960, pp. 128-131.

The research done by Vladimir Nikolayevich Sukachov in Siberia is not only a bright page in his biography but the foundation for many ideas and theoretical formulations that comprise the nucleus of contemporary phytocoenology.

The complex and poorly studied nature of the Siberian flora fascinated V.N. Sukachev since his early years; during his scientific training as a phytocoenologist, he absorbed the progressive ideas of I.K. Pachoskiy, P.N. Krylov and G.F. Morozov -- the founders of a new field of botany, the science of the interrelation among plants on this earth.

By the time of his first trip to Siberia (1909), Sukachev had already published a whole series of original works on phytocoenology, which were completed on the basis of material gathered in the European portion of Russia. The young scientist was striving to expand the geography of new scientific research; to verify their methods on the greatest possible number of facts, he therefore willingly accepted the offer by the Academy of Sciences of the Russian Geographic Society to participate in an expedition to the Polar Urals and into the Karsk tundra. Here he was for the first time destined to encounter a little known and at the same time an ecological factor -- that of the permanently frozen ground, the important role of which in the geography of the plant cover of the North and of Siberia was pointed out by many botanists-geographers.

The genesis of the speckled tundra and of the hilly peat areas as well as the dynamics of their vegetative relationships are determined by means of thermodynamic processes in the soil; this is a conclusion drawn by V.N. Sukachev in his article published by him as a result of his trip (1911). Since that time the ecological significance of permanently frozen ground in the life of the community has been the subject of intense attention by Sukachev in his work on Siberia. In addition to that, the material gathered at Polar Urals and at the contiguous tundras was utilized by him for writing two large works: "Swamps, Their Formation, Development and Peculiarities" (1914), and "An Intro-

duction to the Study of Plant Communities" (1915), which became part of the foundation for the development of Russian phytocoenology and the study of swamps.

V.N. Sukachev's explorations of Trans-Baikal and Pre-Baikal were particularly fruitful (1910-1915); he resolved many problems associated with phytocoenology, botanical geography, studies of swamps as well as those inherent in the systems of plants and in the utilization of plant resources in agriculture. The applied significance of his work during that period which was conducted according to a program of the Immigration Administration was conducive in the formulation of the practical trend in all of Sukachev's subsequent scientific activity. Not unlike his teacher, G.F. Morozov, for whom the needs of Russian silviculture have always served as a stimulus for the creation of a study of forests, V.N. Sukachev, even while phytocoenology was still in its infancy, outlined its practical paths. In assuming the direction of the work by the Amur Expedition in 1910, he stressed that "...botanical work must in the end pursue practical goals; there is no premise to refute that and the botanists have no right to pursue purely scientific goals; the basic direction of the work, the program and its scope must to a great degree be determined by practical goals." (minutes of the Botanical-Geographic Sub-Commission of the Free Economic Society, No. 20, 5 April 1910). Subsequently this thought became the guiding element in the activities of all those directed by V.N. Sukachev, both expeditions and institutions.

In organizing botanical work at the Amur region in the summer of 1910, he concentrated his attention on the study of forest vegetation in the upper Tungir basin and also described the plant communities of the mountain tundras, shrub vegetation below bare mountains, as well as the hilly areas of the alluvial river and lake terraces. V.N. Sukachev studied the ecological, biological and phytocoenological peculiarities of the dahurian larch -- the principal component of the forests at the Tungir basin. The less frequently encountered pine forests of this area also received considerable attention in his works. The results of his research published in 1912 represent the first phytocoenological description of the Siberian forests. The phytocoenological analysis of the formation permitted the author to isolate and plot a course of the solution of a number of extensive and up until now pressing geobotanical problems.

1. The relationship between the larch and the pine in the forests of Eastern Siberia; the dynamics in the association of both varieties.

2. The relationship of individual synusia in the light coniferous forests.

3. The influence of the dominantly subordinate synusia on the rejuvenation of forest varieties.

4. The role of forest fires on the reforestation pro-

cesses and on the changes in forest association.

5. The role of the permanently frozen soil on the life of the plant community.

6. Problems of interrelation and interaction among the forest and the mountain tundra, forest and the swamp.

7. Reasons for the lack of forests on mountain tundras.

The material gathered during tundra explorations were subsequently used by Sukachev on more than one occasion for theoretical generalizations.

In 1911 V.N. Sukachev studied the Nerchinsk steppes, and then in 1915 he worked along the Baikal shores and on its islands. As a result of that he published a series of articles (1912, 1913, 1914, 1915 and 1916) which examined the relationships between the forest and the steppe, and expressed his views on the relict characteristics of the southern treeless slopes of Trans-Baikal, the influence of Lake Baikal on the surrounding vegetation is also analyzed and the endemic nature of Baikal flora is explained. The detailed descriptions of the plant communities are accompanied by indications on how to change them. Much attention is devoted to the pinpointing of areas where the dahurian and the Siberian larch is found in the study of deciduous forests. Familiarity with the virgin vegetative cover and the flora of the Ushkan' islands prompted V.N. Sukachev and G.I. Poplavskaya (1914) to preserve them for possible future deeper studies and a solution of the many "riddles" of the Baikal. This problem was raised for the second time in print by V.N. Sukachev and V.V. Lamakin in 1952.

The richest collections of flora were gathered by Sukachev both on the Baikal and the Trans-Baikal regions; they furnished the material for his work in the field of plant taxonomy.

After the Great October Revolution (1925-1928), N.V. Sukachev was again directing botanical work in the Baikal region. In 1931 the Academy of Sciences created the Angar forest and in 1932 the Briat Mongolian combined expeditions. Ya. Ya. Vasil'yev, V.A. Povarintsyn, P.K. Krasil'nikov and others participated in these expeditions. Supervision of the research was delegated to V.N. Sukachev. The basic feature of work accomplished during that period was not only the study of natural peculiarities of the vegetative cover but the evolution of methods for their rational exploitation as well. In his outline of a program for future forest research in the Trans-Baikal region, V.N. Sukachev underlined the necessity for a specific solution of many problems:

"Reforestation problems, a better organization of the exploitation and care of forests require specific study no less than the fodder plants" (1936, page 15). At the same time he pointed out the necessity for a resolution of a number of

theoretical problems associated with a knowledge of the Siberian plant history. The realization of this program became possible only after the National War of Liberation when through the efforts of the staff of the Institute of Forestry of the Academy of Sciences USSR, directed by V.N. Sukachev, a number of joint and specific studies of certain regions of the Trans-Baikal region, Yakutiya, Far East and Middle Siberia were undertaken.

During the course of the National War of Liberation V.N. Sukachev studied the pine forests that have become acclimatized to steppes in the Kokchetavskiy region, characterizing these tree communities (1948) as varieties of forest biogeocenosis. The ecological-phytocoenological associations between them, the regional specificity and the classification of the types of forests are illustrated by the system of rows, which materially differ from the previously outlined schemes of the formation of pines in the taiga zone of the USSR.

V.N. Sukachev's scientific interests in Siberia are multi-lateral. He has devoted much energy and attention in order to gain an understanding of the form and variety of the larch trees, birch trees and willow trees. The basis for his work in the field of forest taxonomy were his personal collections gathered during the numerous trips through Siberia, the collections belonging to many of his colleagues as well as the herb collections of the Botanical Museum of the Academy of Science and that of the Botanical Garden.

In 1924 Sukachev published the preliminary results of monographic studies of the genus *Larix*, and in 1931 two new types of larch were described (*Larix maritima* and *Larix lubarskii* Sukacz). The history of the phylogenetic development of the larch, their inter genus polymorphism, the geography of the various forms and varieties have for a long time interested the researcher. The need for a thorough illumination of these questions was expressed by Sukachev when he was still working at Tungir, where he made his first attempt at a critical generalization of the literature on the larch. Later (1924), using the biometrical method, the author made a comparative morphological and anatomical description of the diagnostic symptoms and of some 14 varieties of the genus *Larix*. Further geographical and paleobotanical analysis permitted him to group the varieties into "natural genetic rows" and to create a picture of the phylogenetic history of the genus *Larix*. V.N. Sukachev's work entitled "To the History of the Development of the Larch" (1924) caused much interest among a widespread group of botanists.

Sukachev's articles devoted to the taxonomy of the Siberian birch trees (1911, 1914, 1916) deserve special mention. The author isolates two varieties of Altai birch (*Fruiticosae* and *Nanae*) and throws light on questions pertaining to the differences in their genus and describes a new variety of birch (*Betula exilis* Sukacz). He discovered two new varieties of high-standing

birch (*B. platyphylla* and *B. irkutensis* Sukacz) within the Trans-Baikal and Amur regions as well as in Yakutiya. Later (1929) from Yakutiya he describes the *Betula Cajanderi* Sukacz and from northwestern Mongolia -- the *B. Hippoluti* Sukacz. A new variety among the endemic Baikal flora is the *Betula baicalensis* Sukacz. In Siberia Sukachev gathered much material on the taxonomy of birch, which was described in a number of publications.

Questions associated with the Quaternary vegetative cover of Siberia concerned V.N. Sukachev since his early years up until the present time. The first reports on this subject (1910, 1911, 1914) expanded considerably the existing volume of knowledge on the subject of post Tertiary history of the vegetation. In Western Siberia he excavated remnants of many trees along with remnants of arctic flora that fringed the receding glacier. This furnished a basis to suppose that not far from the glacier there existed conditions which permitted the growth of not only arctic but some of the more heat-loving plants.

Among the paleontological discoveries in northeastern Asia, Sukachev describes the late Tertiary Volossovich spruce -- which witnessed the former more northern position of the dark coniferous forests and the larch, closest to the *Larix sibirica*, the migrating paths of which penetrated far beyond its present locations. He found remnants of many varieties closely similar to the ones encountered at the present time, in the stomach of a mammoth from Yakutiya (1914). The steppe varieties that underlie the relict characteristics of the present steppe communities of Yakutiya deserve special attention.

A deduction concerning the existence of an interglacial xerothermal period in the east and north of Siberia is brought out with more persistence in the author's later work (1922): "...those interesting steppe plants, animals and soils which are at the present time encountered in isolated areas of the Yakutskaya region and which are separated by expanses of the taiga from real steppes must be regarded as relicts (remnants) of that warm-dry period when the steppes in eastern Siberia penetrated much farther to the north than they do at the present time." (pages 40-41). In the same work Sukachev expresses a supposition that contrary to the established opinion regarding a broad movement of the tundra into the forest area, the opposite situation may be expected in the east of Asia. That viewpoint was later substantiated by certain geographers and geobotanists (A.A. Grigor'yev, L.N. Tyulina, B.Z. Tikhomirov and others).

Paleo-botanical work in the Obi and Irtysh basins was conducted during a five year period (1931-1935) under the direction of V.N. Sukachev. The results were published on the pages of reports and statements of the Academy of Sciences USSR as well as in collections of reports on its annual expeditions for that period.

The first attempt at a generalization of all geobotanical materials on Siberia was made by V.N. Sukachev in his large theoretical work entitled: "History of the Vegetation of the USSR during the Pleistocene Period" (1938).

In ending this brief summary of V.N. Sukachev's scientific activities in Siberia we would like to once again stress the variegated nature and the importance of the questions that he raised. Many of them are at the present time included in the project programs of Siberian scientific institutions, especially at the Institute of Wood and Forestry of the Siberian Department of the Academy of Sciences USSR.

MIKHAIL VASIL'YEVICH MARKOV

Following is the translation of an article by N.M. Kulikova of the Kazan' State University imeni V. I. Ul'yanov-Lenin, published in Botanicheskiy Zhurnal, Vol. 45, No. 9, Leningrad 1960, pp. 1380-1385.

M.V. Markov, a worthy continuator of the Kazan' Botanists' School founded by S.I. Korzhinskiy and A. Ya. Gordyagin, will be 60 years old.

Mikhail Vasil'yevich was born on 27 November 1900 in the city of Tsaritsyn (presently Stalingrad) to the family of a trade school teacher. After finishing secondary school with a gold medal, he entered the natural sciences section of the Physical Mathematical Department of the Kazan' University. An ardent lover of nature, M.V. aspired to learn not only its laws but also how to apply the acquired knowledge in practice in agriculture. This prompted him to simultaneously enrol in the Institute of Agriculture and Forestry. He began his first scientific investigation while still a student. Specializing in botany with Professor A. Ya. Gordyagin, he participated in excursions organized by the Society of Naturalists; he had an avid interest in botanical problems, diligently studied the methodology of botanical field investigations and engaged in independent projects.

While a student he completed two interesting works -- "Biometric Observations of *Ficaria Ranunculoides*" and "The Course of the Ripening of Rye on Fallow Land Turned at Different Times in 1923" both of which were highly evaluated and published. In becoming familiar with M.V.'s earliest works, one is impressed with his desire to provide a profound analysis of the phenomena under examination, to determine the relationship between peculiarities of the organisms and the environmental conditions, as well as to reveal the reasons for changes in the organisms caused by changes in the environment.

According to Gordyagin, "Markov displayed remarkable capacity for work and achieved results that are usually not attained by students taking the course".

In September of 1924, M.V. completed the University of Kazan' and in October of the same year he finished the Kazan' Institute of Agriculture and Forestry, receiving the title of a graduate agronomist. Upon finishing the university he remained

as a scientific worker with the Department of Botany. The young scientist began to conduct intensive scientific work during the very first year. On Gordyagin's suggestion, he investigated the Chistopol'skiy canton of the Tatar Autonomous SSR where he gathered extensive material on herbs. The areas populated with steppe plants were of exceptional interest to the young botanist. His interest in the study of forest and steppe plant communities forced him to become acquainted with the extensive literature on steppes. In 1926 Markov was sent to the II All-Union Congress of Botanists where he read a report entitled "Certain Data on the Forests of the Chistopol'skiy Canton of the Tatar Republic".

A. Ya. Gordyagin made the following remark in his characterization: "The results of B.M. Markov's first year as a scientific worker 2d grade must be recognized as successful: due to his outstanding capability for work and an obvious absorption with scientific work, Markov rapidly masters the different methodologies of laboratory and field investigations without neglecting the further promulgation of his own theoretical training".

From January 1926 he combined his post-graduate studies with the work of an assistant in meadow culture at the Kazan' Agricultural Institute. During the subsequent years he also skillfully combined pedagogical work with studies and scientific research. M.V. was sent to Leningrad on more than one occasion to work at the library of the Main Botanical Garden and in the Herbarium as well as to study methods of peat analysis at V.N. Sukachev's laboratory.

From 1925 until 1929 he directed geobotanical research in the Trans-Kama regions of the Tatar Autonomous SSR. This research was of a planned nature and was designed to gather material that would characterize forest, steppe and weed vegetation of the Trans-Kama region. Results of his work in the Trans-Kama region were described by M.V. Markov at the III All-Union Congress of Botanists and summarized in the works entitled "The Field Weed Vegetation of the Trans-Kama Region of the Tatar Autonomous SSR" and "The Forest and the Steppe Under Conditions Prevalent in the Trans-Kama Region". The second work, which resolved a complex theoretical problem regarding the relationship of the forest to the steppe in the Trans-Kama region, was later presented as a bachelor's dissertation and received a high evaluation. After completing his post-graduate work, M.V. was appointed in 1930 as the Chairman of the Department of Botany of the Kazan' Agricultural Institute and of the Department of Agrobotany and Meadow Culture at the Institute of Dairy Farming.

In the spring of 1932 he was appointed Chairman of the Botanical Section of the Kazan' University.

The direction of his work did not change: M.V. continued to study Tatar vegetation. His first investigations were of a planned and local nature, while from 1930 all his work was

conducted on assignment of the industrial enterprises, primarily on the basis of assignments by the Tatar People's Land Commissariat, his work became more purposeful and responded to the demands of agricultural practice.

In 1932 M.V. directed the inventory of meadows and pastures throughout the entire territory of Tataria. The work that was accomplished was considered significant by the All-Union Fodder Crop Institute. Markov made a map of the meadows scaled at four miles to one inch and wrote a pamphlet entitled "Improvement of Pastures in Tataria", and considerably later he completed a large work entitled "The Meadows of the Tatar Autonomous SSR (Hay Harvests and Pastures)". This work somewhat resembles a handbook which contains descriptions of the types of meadows along with recommendations for their melioration.

In 1933 when the Land Apportionment Administration of the Tatar People's Land Commissariat started organizing a region of sovkhozes and kolkhozes of the Tatar Autonomous SSR, M.V. directed geobotanical surveys of these territories. As a result of this work, each sovkhoz and kolkhoz received: 1) A map of the territory indicating the types of meadows and steppes along with an indication of the degree of contamination of the fields with weeds, and 2) a description of the field weed and meadow vegetation along with a description of measures for combatting weed infestation of the crops and measures for improving hay fields and pastures.

Although planned geobotanical investigations permit the exploration of an extensive area, they do not allow a detailed analysis of the peculiarities that determine the distribution of plant communities, their composition and structure. Keeping this constantly in mind, M.V. aspired to supplement planned investigations with specific studies of meadow vegetation.

The results of such specific investigation were his articles entitled "On the Problem of Determining the Productivity of a Meadow" (1935) and "The Field Method of Determining the Reserve of Air in the Soil" (1935) which describes the instrument that he invented for the determination of soil density.

In 1937 M.V. presented his bachelor's dissertation and continued to gather material for a doctoral dissertation while working at the Geobotanical Station of the Botanical Institute of the Academy of Sciences USSR near the city of Ul'yanovsk. In 1939 he successfully presented his doctoral thesis on the "Natural conditions for the Development of Vegetation on the Volga Alluvial Plain". On the basis of an analysis of the conditions of the habitat and the ecology of the composit coenosis of the varieties, he makes an attempt to explain the reasons that determine the composition and structure of the meadow phytocoenosis. M.V. stresses that phytocoenosis must be considered as a dialectical unity, the basis for occurrence, development and disappearance of which is the struggle of two

interpenetrating situations: the habitat determines the phytocoenosis and phytocoenosis determines the habitat. He considers it necessary to distinguish two concepts -- "location" and "habitat", the first one meaning the plot of territory with inherent ecological factors that permit a given plant to grow on that plot of land and the second one meaning the location changed through phytocoenosis.

In posing a question regarding the causes that bring about a specific type of phytocoenosis, M.V. points out that in order to reveal them it is necessary to investigate: 1) the habitat factors, their interconnection and mutual conditioning, and 2) the ecological and biological peculiarities of the organisms that compose the phytocoenosis.

M.V. distinguishes the ecological scope of the habitat (the combination of habitat factors, that form conditions permitting the growth of a greater or fewer number of varieties in that particular area with greater or lesser differences in their ecological peculiarities) and the capacity of the habitat for varieties (the overall number of varieties that can normally exist within the limits of a given habitat area).

In order to understand why a certain variety is a part of the coenosis, it is necessary to know which "leading" factors predetermine its participation in the coenosis. The combination and concentration of the environmental factors that determine the normal development of the variety do not coincide with the combination and concentration of the factors necessary for the abundance of that variety in a given coenosis. Basing himself on this, M.V., like A.N. Shennikov, proposes to differentiate the optimum ecological and phytocoenosis conditions for the plants.

By the end of 1939 M.V. was awarded the academic degree of a doctor of biological sciences, and in 1940 he was appointed Professor in the Department of Botany.

The National War of Liberation placed new problems before the botanist. In connection with that, M.V. took part in the work of searching for raw resources among the local flora; he participated in an expedition of the Main Botanical Garden (Moscow) for the purpose of conducting an inventory of valuable vitaminic -- dog rosa; he studied the conditions that determine the most abundant distribution of it in nature and wrote an article entitled "The Dog Rosa on the Volga Alluvial Plain". At the same time he published a work entitled "Wild Growing Medicinal Plants of the Tatar Autonomous SSR". On an assignment from the Council for the Study of the Productive Forces of the Academy of Sciences USSR, M.V. wrote two articles entitled "The Vegetation of the Tatar Autonomous SSR" and "The Meadows of the Tatar Autonomous SSR" (1942). In 1943 a geographical map of the Tatar Autonomous SSR to the scale of 1:500,000 was made under his direction.

In 1944 he assumed the direction of the newly established Department of Geobotany at the Kazan' University and created a combined staff which bases its work on the principal determinations formulated by him in 1939 in his doctoral thesis and later in an article entitled "The Problems of Soviet Geobotany" (1951).

An analysis of the habitat factors, an understanding of the interrelationship between the phytocoenosis components, as well as that between the habitat and phytocoenosis give us the possibility to direct the development of the latter and to change it in the desired way and to take from it the maximum of whatever it can provide. "Not to provide limitless superficial descriptions and differentiations of the phytocoenosis but to penetrate into their essence and to point out means of controlling them, this is the principal geobotanical task" (Markov). In underlining the principal direction of geobotany, M.V. provides the following definition of this science: "Geobotany studies not only the vegetative cover (and the plant communities composing it) but points out the ways for altering it in order to subordinate it to the needs of socialist construction."

This yields the principal tasks of Soviet geobotany:

- 1) A profound study of all geobotanical positions on the basis of a methodology of dialectical materialism.
- 2) A thorough study of the causes that determine the basic signs of the plant community, a study of the nature of the mutual interaction of the organisms on each other.
- 3) The development of a methodology for studying plant communities.
- 4) The establishment of a close contact between geobotany, agricultural and forest husbandry.

During 1944-1948, M.V. conducted extensive work on the study of the flora and vegetation of the Volga and Kama river alluvial plains within the Tatar Autonomous SSR along with co-workers from the Department of Geobotany of the Kazan' University and the Department of Botany of the Agricultural Institute. For that purpose he organized four combined expeditions which included the participation of zoologists and pedologists. The final results of these investigations are summarized in a large monograph which was published in 1955. This book, consisting of two parts, contains an exhaustive inventory of the alluvial plain flora and provides a many sided characteristic of its vegetation which was not contained in any of the heretofore published works on the alluvial river plains of the USSR. Furthermore, the author devotes a separate chapter to theoretical aspects of certain questions of phytocoenosis, which served as a basis for methods used in the investigation.

The Department directed by M.V. worked on the problem of interrelations between organisms in phytocoenosis -- a leading problem of phytocoenosis. The elaboration of this problem within the Kazan' University first started by the founders of

the Kazan' Geobotanical School -- N.F. Korzhinskiy and A. Ya. Gordyagin during the second half of the last century. At the present time the problem of the interrelationship between the organisms in the plant community continues to attract the attention of the geobotanists of the Kazan' University.

The history of the development of the investigations of this problem at the Kazan' University is briefly described in M.V. Markov's article entitled "The Problem of the Relationship Among the Plant Organisms That Enter Into the Composition of the Plant Community" (1955).

The following paths have been outlined for the solution of this problem:

- 1) An experimental investigation of the intra-variety and inter-variety interrelationships among the organisms in plain and artificially created communities of crops and wild growing plants including both herbaceous and wood plants.

- 2) Specific investigations of natural (wild) plant communities both meadow and forest.

At the same time a study of the ecology and the biology of the community components and their role in the formation of the environment as well as the reaction of the organism to the conditions, created for it by the neighboring organism as a biogenic factor of the environment, are taken into consideration.

Mikhail Vasil'yevich, as chairman of the Geobotanical Department, mobilizes its forces for the satisfaction of new demands made by the national economy, subordinating all of the work to a solution of the problems set before the scientists by the Party and the Government. The Department conducted several expeditions in order to study the influence of underflooding on vegetation in connection with the construction of hydroelectric plants and the creation of artificial water reservoirs. A collection of works entitled "On the Influence of Underflooding on Vegetation" was written and released for publication.

It is desired to stress the fact that all of Mikhail Vasil'yevich's works are up-to-date and are associated with the study of the local area. The study of meadows is of primary importance in his work; he does not, however, limit his work to that problem alone. His interests are broad and multi-lateral. Being an exceptionally erudite person who possesses the specialties of an agronomist, pedologist and geobotanist, M.V. Markov works at studying the field weed and forest vegetation in addition to engaging in theoretical problems of geobotany. He skillfully combines the field and laboratory research, develops a methodology for various investigations, invents the instruments necessary for research. He also takes an active part in the work of the All-Union botanical consultations and conferences.

M.V. Markov is credited with 42 published works. But scientific work does not comprise all of the activity of this tireless scientist.

He has 35 years experience in teaching; he engages in problems of pedagogical methodology of practical and theoretical courses, he gave and gives lectures on meadow culture, morphology and plant taxonomy, on field weed vegetation and on the methodology of geobotanical investigations. He devotes much attention to the presentation of lectures in accordance with present day levels of scientific development and supplements his courses and the practical work with the necessary study aids and equipment. He directs academic and practical production work, course and degree work, along with work on bachelor degree dissertations.

He has recently prepared a textbook on geobotany for publication. M.V. is an active public worker, a participant of a multilateral and most variegated social life of the university. He has on more than one occasion been elected to public office, he reads lectures on all types of subjects. He was the Dean of the Department of Biology for a period of 11 years, after which for several years he was the pro-rector for scientific work of the Kazan' State University. M.V. is an honored man of science of the Tatar Autonomous SSR; he was decorated with several medals, with "The Badge of Honor" and the "Order of Lenin".

On the occasion of his 60th birthday we wish Mikhail Vasil'yevich good health and future success in his fruitful activities.

A LIST OF M.V. MARKOV'S PUBLISHED WORKS.

1926

1) "Certain Data on the Forests of the Chistopol'skiy Canton of the Tatar Republic" in the book Dnevnik Vsesoyuznogo S"yezda Botanikov v Moskve v Yanvare 1926 g. (A Diary of the All-Union Congress of Botanists in Moscow in January of 1926) edited by Ye. Ye. Uspenskiy, Moscow.

2) "The Course of the Ripening of Rye on Fallow Land Turned at Different Times in 1923" in the book Sbornik Nauchnykh Statey Kazanskogo Instituta Sel'skogo Khozyaystva i Lesovodstva (A Collection of Scientific Articles of the Kazan' Institute of Agriculture and Forestry), Issues III and IV.

1928

3) "Geobotanical Investigations in the Bugul'minskiy Canton of the Tatar Republic" in the book Dnevnik Vsesoyuznogo S"yezda Botanikov v Leningrade v Yanvare 1928 g. (A Diary of the Congress of Botanists in Leningrad in January of 1928), Leningrad.

1929

4) "Biometrical Observations of *Ficaria Ranunculoides*" in Uchenyye Zapiski Kazanskogo Gosudarstvennogo Universiteta (Scientific Notes of the Kazan' State University), Vol. 89, Book 2.

1930

5) "Work on the Investigation of the Meadows and Swamps of the Tatar Autonomous SSR" in Trudy Obshchestva Izucheniya Tatarstana (Works of the Society for the Study of Tatarstan), Vol. III.

1933

6) "The Struggle Against Weeds as a Measure Against Droughts in the Tatar Republic" in Izvestiya Kazanskogo S-Kh Inst. (News of the Kazan' Agricultural Institute), Issue 1.

7) "Weeds in the Fields of the Tatar Republic and Adjacent Areas" in Izvestiya Kazanskogo S. Kh. Instituta, No. 2.

1934

8) Mery po Uluchsheniyu Lugov i Pastbishch (Pomyatka

dlya Kolhozov i Sovhozov (Measures for Improving Meadows and Pastures, A Pamphlet for Kolkhozes and Sovkhozes. Kazan'.

1935

9) "Geobotanical Investigations in the Tatar Republic for 15 Years" in Uchenyye Zapiski Kazanskogo Gosudarstvennogo Universiteta, Vol. 95, Book 5.

10) "On the Question of Determining the Productivity of Pastures" in Sov. Bot. (Sov. Bot.) No. 4.

11) "The Forest and the Steppe Under the Conditions in Trans-Kama" in Uchenyye Zapiski Kazanskogo Gosudarstvennogo Universiteta, Vol. 95, Book 7, Botanika (Botanika), Issue 2.

12) "The Field Method of Determining the Reserve of Air in the Soil", Sov. Bot., No. 5.

1938

13) "An Instrument for Determining the Density of Soil" in Priroda (Nature), Issue 3.

1939

14) Les i Step' v Usloviyakh Zakam'ya, II, Khvoynyye Lesa (The Forest and Steppe Under the Conditions in Trans-Kama, II, Coniferous Forests), Uchenyye Zapiski Kazanskogo Gosudarstvennogo Universiteta Vol. 99, Book 1, Botanika, Issue 5.

1940

15) "The Natural Conditions in the Development of Vegetation on the Volga Alluvial Plain", Part I in the book Geobotanika (Geobotany) edited by Ye. M. Lavrenko, Issue 4, Moscow -- Leningrad.

1941

16) "Darwinism and Geobotany" in Uchenyye Zapiski Kazanskogo Gosudarstvennogo Universiteta, Vol. 101, Book 1.

1942

17) "The Struggle for Survival Among Plants and Harvests" in Uchenyye Zapiski Kazanskogo Gosudarstvennogo Universiteta, Vol. 102.

1943

18) "The Scientific Session of the Department of Biology of the Kazan' State University imeni V.I. Ul'yanov-Lenin in 1942" in Priroda, No. 1.

1944

19) Dikorastushchiye Lekarstvennyye Rasteniya Tatarskoy ASSR (The Wild Growing Medicinal Plants of the Tatar Autonomous SSR), Kazan'.

20) "Why did the Meadows of Tataria Grow Meager" in Sots. Zemledel. (Soc. Agr.), 20 May.

1946

21) "The Meadows of the Tatar Autonomous SSR (Hay Harvests and Pastures)" in Uchenyye Zapiski Kazanskogo Gosudarstvennogo Universiteta, Vol. 106, Books 1 and 6.

22) Luga Tatarskoy ASSR i Priyemy Pravil'nogo Ukhoda za Nimi (Meadows of the Tatar Autonomous SSR and Measures for Their Improvement), Kazan'.

23) Sornyye Rasteniya Tatarskoy ASSR i Mery Bor'by s Nimi (Weeds of the Tatar Autonomous SSR and Measures for Combatting Them), Kazan'.

1947

24) "Oak Groves" in the collection Priroda Tatarii (The Nature of Tataria), Kazan'.

25) "The Alluvial Plain" in the collection Priroda Tatarii, Kazan'.

26) "Steppe Vegetation" in the collection Priroda Tatarii, Kazan'.

27) "The Dog Rosa on the Alluvial Plain of the Volga River (An Ecological Study)" in Trudy Obshchestva Yestestvopysatel'ey pri Kazanskom Universitete (The Society of Naturalists at the University of Kazan'), Vol. VII, Issues 3-4.

1948

28) Rastitel'nost' Tatarii (The Vegetation of Tataria), Kazan'.

1950

29) "Natural Conditions for the Development of Vegetation on the Alluvial Plain" in Uchenyye Zapiski Kazanskogo Gosudarstvennogo Universiteta, Vol. 110, Book 4.

1951

30) "The Problem of Hay Harvests and Pastures Under Conditions Existing at the Greater Volga" in Uchenyye Zapiski Kazanskogo Gosudarstvennogo Universiteta, Vol. III, Book 1, and Trudy Obschestva Yestestvopytateley pri Kazanskom Gosudarstvennom Universitete, Vol. VIII.

31) "Problems of Soviet Geobotany" in Uchenyye Zapiski Kazanskogo Gosudarstvennogo Universiteta, Vol. III, Book 1.

1952

32) "From the History of the Kazan' Geobotanical School" in Uchenyye Zapiski Kazanskogo Gosudarstvennogo Universiteta, Vol. 112, Book 7, Biologiya (Biology).

1953

33) "The Struggle Against Weeds Under Grass-Arable Rotation" in Uchenyye Zapiski Kazanskogo Gosudarstvennogo Universiteta Vol. 113, Book 1.

1954

34) "On Problems of Laboratory Geobotanical Investigations (Report Thesis) in Doklad na Soveshchaniy po Statsionarnym Geobotanicheskim Issledovaniyam (A Report at a Meeting on Laboratory Geobotanical Investigations).

1955

35) "The Problem of the Relationship Among Plant Organisms Entering into the Composition of the Plant Community" in Botanicheskiy Zhurnal (Botanical Journal), Vol. XLIII, No. 2.

36) "The Flora and Vegetation of the Alluvial Plain of the Volga and Kama River Within the Borders of the Tatar Autonomous SSR", I, in Uchenyye Zapiski Kazanskogo Gosudarstvennogo Universiteta, Vol. 115, Book 1, Botanika (with co-authors).

37) "The Flora and Vegetation of the Alluvial Plain of the Volga and Kama Rivers Within the Borders of the Tatar Autonomous SSR" II, in Uchenyye Zapiski Kazanskogo Gosudarstvennogo Universiteta, Vol. 115, Book 6.

1956

38) "The Role of V.N. Sukachev in the Development of Laboratory Geobotanical Investigations and the Reflection of His Ideas in the Work of Tatar Geobotanists" in the collection Akademiku V.N. Sukachevu k 75-letiyu so Dniya Rozhdeniya (To

Academician V.N. Sukachev on the Occasion of his 75th Birthday),
Moscow-Leningrad.

1957

39) "Experience in the Comparative Study of the Tatar
Soils by Means of the Phytometer" in Uchenyye Zapiski Kazanskogo
Gosudarstvennogo Universiteta, Vol. 117, Book 9.

40) "An Instrument for Determining Air Permeability of
the Soil" in Uchenyye Zapiski Kazanskogo Gosudarstvennogo
Universiteta, Vol. 117, Book 9.

1958

41) "On the Dominant Points of Phytocoenology According
to the Work of Soviet Geobotanists" Botanicheskiy Zhurnal, Vol.
XLIII, No. 4.

1959

42) "The Improvement of Meadows and Pastures" in the
book Sistema Vedeniya Sel'skogo Khozyaystva v TASSR (System of
Conducting Agriculture in the TASSR), Kazan'.